

Remarks/ Arguments

Upon entry of the foregoing amendments, claims 1 to 29, 32 to 35, and 37 to 45 will be pending in the present patent application. Claims 1 to 3, 8, 9, 11, 12, 17, 26, 28, 29, 37, 38, and 42 to 45, have been amended, without prejudice. Claims 36, and 46 to 52 have been canceled, without prejudice, in view of the finality of the Restriction Requirement as indicated at page 2 of the Action. Applicants reserve the right to present the subject matter of claims 36, and 46 to 52 in a later-filed divisional patent application. Claims 30 and 31 have been canceled, without prejudice. No new matter has been added.

The present description has also been amended to correct an obvious typographical error in paragraph [0004]. Support for the amendment to paragraph [0078] is found, for example, in original claim 8.

The Action includes rejections under 35 U.S.C. §§ 102(a), 103(a), 112, second paragraph, and the judicially created doctrine of obviousness-type double patenting. In view of the following remarks, reconsideration and withdrawal of the rejections are requested respectfully.

Discussion of the Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1 to 35 and 37 to 45 have been rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regard as their invention. For the reasons detailed below, Applicants respectfully traverse this rejection.

Claims 1, 28, and 38 have been rejected because the phrase “substantially free of Si-OH bonds” allegedly rendered the claims indefinite. Applicants submit respectfully that claims 1, 28, and 38 have been amended to specify that the structure-forming material is

silicon-based, thereby providing antecedent basis for the phrase in question. Accordingly, reconsideration and withdrawal of the rejection are requested respectfully.

Claims 2 and 3 have been rejected as allegedly being indefinite because it is allegedly unclear *when* the further treatment takes place. Applicants, however, do not understand the apparent requirement to limit the further treatment step to a particular point in time during the claimed process. Indeed, Applicants' specification at page 23, paragraph [0080] expressly teaches that "the treatment step may be performed before, during, or after the exposing step." Accordingly, reconsideration and withdrawal of the rejection of claims 2 and 3 are requested respectfully.

Claims 2, 28, 8, and 9 have been rejected as allegedly being unclear because they include "relative terms" such as, for example, "hot" in "hot plate", "high" in "high energy", "picosecond" with respect to laser, and "modified" in "modified deposition chamber". Applicants respectfully traverse this rejection because no evidence has been presented that would suggest that one skilled in the art presented with the instant specification, would not understand the metes and bounds of such terms.

MPEP § 2173.05(b) plainly states that "[t]he fact that claim language, including terms of degree, may not be precise, does not automatically render the claim indefinite Acceptability of the claim language depends on whether one of ordinary skill in the art would understand what is claimed, in light of the specification" (MPEP at 2100-208 Rev. 2, May 2004). The burden is on the Office to provide evidence or technical reasoning to support a contention that one of ordinary skill in the art would not be able to understand the meaning of the claim terms. MPEP § 2173.02. The standard to apply is whether the claims "define the patentable subject matter with a reasonable degree of particularity and distinctness" (id. at 2100-208 Rev. 2, May 2004) (emphasis in the original).

Indeed, Applicants have defined their invention with a reasonable degree of particularity and distinctness because all of the disputed relative terms are well known to one of ordinary skill in the art and are supported by Applicants' specification (*see, e.g.*, page 21, paragraph [0073], page 22, paragraph [0077], and amended paragraph [0078] above). Absent any evidence or technical reasoning to the contrary, the rejections must be withdrawn.

Claim 4 has been rejected as allegedly being indefinite because of the inclusion of the word "shuttered". In this regard, it is alleged that "'shuttered' might be a subset of 'pulsed'" (Action at 3). Applicants submit respectfully that one of ordinary skill in the art is aware that "shuttered" and "pulsed" have different, unrelated meanings as they are used in connection with providing ultraviolet light. To advance prosecution of this patent application, Applicants have nonetheless amended claim 4 to further clarify that the ultraviolet light is comprised of at least one selected from the group consisting of dispersed, focused, continuous, intermittent, and combinations thereof. The term "intermittent" finds inherent support in the term "pulsed" as originally found in the claims.

Claim 8 has been rejected as allegedly being indefinite because some species are allegedly not UV species. This is patently incorrect. Indeed, one of ordinary skill in the art knows that a frequency tripled laser in the IR or visible region has a frequency in the UV range by virtue of the increased frequency. Accordingly, claim 8 is clear to those of ordinary skill in the art.

Claim 12 has been rejected as allegedly being indefinite because the various polymer species allegedly overlap. Although Applicants disagree respectfully that claim 12 is indefinite, Applicants have amended claim 12 to remove the term "small molecules" for the sole purpose of advancing prosecution of the present patent application. Applicants submit respectfully that one of ordinary skill in the art would recognize that each of the remaining

species are distinct with respect to each other. Accordingly, Applicants submit respectfully that the rejection of claim 12 is now moot.

Claim 15 has been rejected as allegedly being indefinite because the different types of chemical vapor deposition processes allegedly overlap. Applicants disagree respectfully that claim 15 is indefinite because one of ordinary skill in the art would recognize that thermal chemical vapor deposition, plasma enhanced chemical vapor deposition, cryogenic chemical vapor deposition, and chemical assisted chemical vapor deposition are separate species of the generic “chemical vapor deposition” and, as such, each species has its own art-recognized meaning. Thermal chemical vapor deposition, for example, employs heat energy to initiate the reaction; likewise, chemical assisted chemical vapor deposition employs chemical species to initiate the reaction. Accordingly, reconsideration and withdrawal of the rejection of claim 15 are requested respectfully.

Claims 2 and 8 have been rejected as allegedly being indefinite as being of improper dependent form. For the reasons discussed above, Applicants’ claimed invention does indeed include two separate applications of energy – one for the exposing step and the other for the optional treatment step. Applicants disagree respectfully that claims 2 and 8 are of improper form and request reconsideration of the rejection.

Claim 9 has been further rejected as allegedly being indefinite. Applicants submit respectfully that, in view of the foregoing amendments, this rejection is now moot.

The Action expressed concerns with the language “the ... step” found in claims 9, 15, 16, and 20 to 22. Applicants submit respectfully that, in view of the foregoing amendments, this concern is now moot.

The Action also expressed concerns over certain of the gases recited in claim 26. Applicants submit respectfully that, in view of the foregoing amendments, this concern is now moot.

The Action also alleged that claims 30 and 31 contradict the requirements of the claims from which they depend. Applicants submit respectfully that, in view of the foregoing amendments, this concern is also moot.

The Action also expressed concerns that certain recitations of claims 43 and 44 are not positively identified. Applicants submit respectfully that, in view of the foregoing amendments, this concern is moot.

Discussion of the Obviousness-Type Double Patenting Rejections

Claims 1 to 35 and 37 to 45 have been provisionally rejected under the judicially-created doctrine of obviousness-type double patenting as allegedly being unpatentable over claims 2-26, 31-34, 38-45, and 50-54 of copending Application No. 10/295,568 ("the 568 application"); claims 1-5, 6-8, 13, 27-30, and 39 of copending Application No. 10/404,190 ("the 190 application"); claims 1-6, 8-10, 13, 15, 17-18, 20, 22-23, and 61-67 of copending Application No. 10/409,468 ("the 468 application"); claims 1-6, 8-10, 15-18, 33-35, 37-33, 45-46, 47-48 and 50 of copending Application No. 10/150,798 ("the 798 application"); 1-3, 7-16, 19-24, 26, 32, and 34-36 of copending Application No. 10/624,357 ("the 357 application"); 2-3, 7-16, 19-26, and 39-45 of copending Application No. 10/379,466 ("the 466 application"); and claims 1-14, 20-22, 24-27, and 30 of copending Application No. 10/842,503 ("the 503 application"). The aforementioned applications are currently pending and are assigned to the assignee of the present application. Applicants respectfully traverse these provisional rejections because there are numerous differences between the instant claims and the cited claims of the above-identified co-pending applications, yet no evidence of record so much as suggesting that those of ordinary skill in the art would have been motivated to modify the subject matter set forth in the cited claims in a way that would have produced one of Applicants' claimed inventions.

An obviousness-type double patenting rejection is “analogous to [a failure to meet] the non-obvious requirement of 35 U.S.C. § 103” except that the patent principally underlying the double patenting rejection is not considered prior art. *In re Braithwaite*, 379 F.2d 594, 154 U.S.P.Q. 29 (CCPA 1967); MPEP § 804 at 800-22. The analysis employed in an obviousness-type double patenting rejection must satisfy the same standards applicable to a rejection under § 103, except that only the claims of the earlier patent (rather than the disclosure) may be used as prior art. *In re Braat*, 937 F.2d 589, 19 U.S.P.Q.2d 1289 (Fed. Cir. 1991); *In re Vogel*, 422 F.2d 438, 441-42 (C.C.P.A. 1970); MPEP § 804 at 800-22. Such analysis requires, among other things, a determination of the scope and content of the pertinent prior art and an identification of the differences between it and the claims at issue. *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 989, 991 (Fed. Cir. 1988). Moreover, to establish a *prima facie* case of obviousness, “there must be some teaching, suggestion or motivation in the prior art to make the specific combination that was made by the applicant.” *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998).

The Action, however, fails to provide any evidence indicating that those of ordinary skill in the art would have been motivated to modify the teachings provided by the claims of any of the above-identified co-pending applications, much less modify those teachings in a way that would have produced a claimed invention. For example, whereas Applicants’ claims require that the recited “porous film is substantially free of Si-OH bonds,” **none** of cited claims of any of the above-identified co-pending applications refers to a porous film as recited in Applicants’ claims that is substantially free of Si-OH bonds. Although the Action acknowledges that the pending claims of the 568 application do not recite a “porous film [that] is substantially free of Si-OH bonds”, the Action does not explain why those skilled in the art would have been motivated to reconcile them through modification of the subject matter claimed in the 568 application. With respect to the other identified co-pending

applications, the Action appears to gloss over the fact that this recitation is missing from the pending claims. Thus, in view of at least this difference, Applicants respectfully request the rejections based upon obviousness-type double patenting be reconsidered and withdrawn.

Discussion of the Rejections Under 35 U.S.C. § 103(a)

Claims 1 to 12, 14 to 15, 17 to 30, 32 to 35, and 37 to 41 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent No. 5,935,646 to Raman et al. (“the Raman patent”), in view of U.S. patent application Publication No. 2003/0054115 to Albano et al. (“the Albano reference”). Applicants respectfully traverse this rejection because there is no evidence of record indicating that those of ordinary skill in the art at the time of the present invention would have been motivated to combine the teachings of the Raman and the Albano patents or even that such combination would have produced Applicants’ claimed invention.

To establish a *prima facie* case of obviousness, however, “there must be some teaching, suggestion or motivation in the prior art to make the specific combination that was made by the applicant.” *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998). “In other words, the examiner must show reasons that the skilled artisan, confronted with the same problem as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.” *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1458 (Fed. Cir. 1998).

Neither the Raman patent nor the Albano reference is sufficient to provide the requisite art-suggested motivation to combine their teachings in such a way as to produce Applicants’ claimed invention. Moreover, such combination is incapable of disclosing each and every recitation of Applicants’ claimed invention.

Applicants' claimed invention defines a process for preparing a porous film comprising (1) forming a composite film onto at least a portion of a substrate wherein the composite film comprises at least one ***silicon-based*** structure-forming material and at least one pore-forming material; and (2) exposing the composite film to at least one ultraviolet light source within a non-oxidizing atmosphere for a time sufficient to remove at least a portion of the at least one pore-forming material contained therein and provide the porous film. Significantly, Applicants' claimed invention is defined such that the porous film is ***substantially free of Si-OH bonds***.

The porous films disclosed in the Raman patent are ***not*** substantially free of Si-OH bonds. Significantly, the porous films disclosed in the Raman patent are prepared by applying a wet coat of a structure-forming material prepared by co-polymerizing tetraethoxysilane (TEOS) and methyltriethoxysilane (MTES) dissolved in ethanol in a two-step acid catalyzed procedure (*see*, Raman at col. 8, lines 33 to 42). Such condensation reaction ***necessarily results*** in the formation of a polymer having Si-OH bonds. In contrast, the silicon-based films of Applicant's claimed invention are typically deposited by a method that substantially avoids the formation of Si-OH bonds – even if components such as, for example, TEOS and MTES are copolymerized in, for example, the vapor phase to form the film. The Albano reference, which also teaches the application of a wet condensation polymer (*see, e.g.*, Albano at [0064] to [0070]), does not remedy this deficiency. Accordingly, reconsideration and withdrawal of the rejection are requested respectfully.

Discussion of the Rejections Under 35 U.S.C. § 102(a)/ § 103(a)

Claims 1 to 4, 10, 12 to 13, 15, 17, 26 to 29, 32 to 35, and 37 to 40 have been rejected under 35 U.S.C. § 102(a) as allegedly anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. patent application Publication No.

2003/0003288 to Nakata et al. ("the Nakata reference"). Claims 5 to 9, 11, 16, and 18 to 25 have also been rejected as allegedly being unpatentable over the Nakata reference.

Applicants respectfully traverse this rejection because (1) the Nakata reference does not disclose each and every element of Applicants' claimed invention; and (2) there is no evidence of record indicating that those of ordinary skill in the art at the time of the present invention would have been motivated to modify the teachings of the Nakata reference in such a way as to obtain Applicants' claimed invention.

In the first instance, the Nakata reference does not anticipate Applicants' claimed invention. Applicants' claimed invention defines a process for preparing a porous film comprising (1) forming a composite film onto at least a portion of a substrate wherein the composite film comprises at least one ***silicon-based*** structure-forming material and at least one pore-forming material; and (2) exposing the composite film to at least one ultraviolet light source within a non-oxidizing atmosphere for a time sufficient to remove at least a portion of the at least one pore-forming material contained therein and provide the porous film.

Significantly, Applicants' claimed invention is defined such that the porous film is

substantially free of Si-OH bonds.

The Nakata reference does not teach a porous film that is ***substantially free of Si-OH bonds***. The Nakata reference teaches that the siloxane resins disclosed therein are sol-gel type polymers (*see, e.g.*, Nakata at page 4, paragraph [0081]). Indeed, the sol-gel type polymers of the Nakata reference all include Si-OH bonds by virtue of the acid-catalyzed condensation/hydrolysis reaction employed to make them (*see, e.g.*, *id.* at page 5, paragraphs [0096] to [0098]).

The Action mistakenly attributes more to the Nakata reference's disclosure than what it really teaches. In this regard, although the Nakata reference acknowledges problems associated with "highly hydroscopic SiOH groups" (*id.* at page 1, paragraph [0017]), the

Nakata reference does not go so far as to affirmatively state that its process **solves** the problem, nor does Nakata state **how** it solves the problem; rather, the Nakata reference merely states that the invention disclosed therein “**can** solve the problem of highly hygroscopic characteristic presented in conventional porous films made of a siloxane resin” (id. at paragraph [0020]). Significantly, the Nakata reference is **completely silent** with regard to whether the alleged problem was solved because the siloxane resins discloses therein are **substantially free of SiOH bonds**. Accordingly, the Nakata reference does not teach or, in the alternative, render obvious Applicants’ claimed invention.

Claims 1 to 30, 32 to 35, and 37 to 41 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over the Raman patent in view of the Albano reference, and further in view of the Nakata reference. As discussed above, neither the Raman patent nor the Albano reference is sufficient to provide the requisite art-suggested motivation to combine their teachings in such a way as to obtain Applicants’ claimed invention. Moreover, as detailed above, the Nakata reference is insufficient to remedy this deficiency. Accordingly, reconsideration and withdrawal of the rejection are requested respectfully.

Claims 1 to 9, 12, 15, 20 to 26, 28 to 30, 32, and 37 to 40 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over the U.S. Patent No. 6,346,300 to Ruepping et al. (“the Ruepping patent”) or U.S. Patent No. 6,174,932 to Pachi et al. (“the Pachi patent”) in view of U.S. Patent No. 4,303,695 to McCann et al. (“the McCann patent”). Applicants respectfully traverse this rejection as either the Ruepping patent or the Pachi patent – either alone or in combination with the McCann patent would not teach or suggest Applicants’ claimed invention.

Applicants claimed invention defines a process for preparing a porous film, the process comprising the steps of forming a composite film onto at least a portion of a substrate wherein the composite film comprises at least one **silicon-based** structure-forming

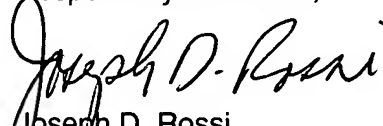
material and at least one pore-forming material. Not one of the Ruepping, Pachi, or McCann patents teaches or suggests "at least one **silicon-based** structure-forming material" as is required by Applicants' claims. Accordingly, neither the Ruepping patent nor the Pachi patent – either alone or in combination with the McCann patent – could possibly teach or suggest Applicants' claimed invention. Accordingly, reconsideration and withdrawal of the rejection are requested respectfully.

Conclusion

Applicants believe that the foregoing constitutes a complete and full response to the Action of record. Applicants respectfully submit that this application is now in condition for allowance. Accordingly, an indication of allowability and an early Notice of Allowance are respectfully requested.

The Commissioner is hereby authorized to charge the fee required and any additional fees that may be needed to Deposit Account No. 01-0493 in the name of Air Products and Chemicals, Inc.

Respectfully submitted,


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